

FORM PTO-390 (Modified)  
(REV 11-98)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

TPP 30873

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/554269

INTERNATIONAL APPLICATION NO.  
PCT/SE98/01997INTERNATIONAL FILING DATE  
04 November 1998PRIORITY DATE CLAIMED  
13 November 1997

TITLE OF INVENTION

FLAT OR SEMI-FLAT ELEMENT INCLUDING A FRAME

APPLICANT(S) FOR DO/EO/US

Manfred BRAUNER

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

## Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ Certificate of Mailing by Express Mail
20. ☒ Other items or information:

- a.) PCT/RO/101
- b.) PCT/IB/304
- c.) Copy of International Application as published (WO 99/25532)
- d.) PCT/IPEA/402
- e.) PCT/IB/308



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526 Rec'd PCT/PTO 12 MAY 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Manfred BRAUNER

Serial No.: National Stage Application based on  
International Application No. PCT/SE98/01997,  
filed November 4, 1998

Filed: May 12, 2000

For: FLAT OR SEMI-FLAT ELEMENT INCLUDING A FRAME

PRELIMINARY AMENDMENT

Honorable Commissioner of  
Patents and Trademarks  
Washington, D.C. 20231

Dear Sir:

Prior to an examination on the merits, please amend the above-identified application as follows:

IN THE ABSTRACT

Please substitute the attached one page Abstract with the Abstract originally filed with the application.

IN THE CLAIMS

Claim 2, line 1, change "characterised" to read --characterized--.

Claim 3, line 1, delete "or 2"; and change "characterised" to read --characterized--.

Please add new claim 7 as follows:

--7. Flat or semi-flat element (1) according to claim 2 characterized in that the wall section (3) is connected to the frame (2) at or very close to the gravity center line (5) of the frame (2).--

Please amend claim 4 as follows:

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4. Flat or semi-flat element (1) according to [any of the claims 1 - 3 characterised] claim 1 characterized in that the frame (2) is a closed hollow profile formed through injection of a [pressurised] pressurized fluid into a still molten thermoplastic material, that the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a barrier is formed in this connection part at the solidification of the thermoplastic material, [wich] which barrier prevents the [pressurised] pressurized fluid from entering the wall section (3) during the manufacturing process.

Please add new claims 8-9 as follows:

--8. Flat or semi-flat element (1) according to claim 2 characterized in that the frame (2) is a closed hollow profile formed through injection of a pressurized fluid into a still molten thermoplastic material, that the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a barrier is formed in this connection part at the solidification of the thermoplastic material, which barrier prevents the pressurized fluid from entering the wall section (3) during the manufacturing process.

9. Flat or semi-flat element (1) according to claim 3 characterized in that the frame (2) is a closed hollow profile formed through injection of a pressurized fluid into a still molten thermoplastic material, that the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a barrier is formed in this connection part at the solidification of the thermoplastic material, which barrier prevents the pressurized fluid from entering the wall section (3) during the manufacturing process.--

Claim 5, lines 1-2, change "any of the claims 1 - 3 characterised" to read --claim 1 characterized--.

Please add new claims 10-11 as follows:

--10. Flat or semi-flat element (1) according to claim 2 characterized in that the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a pivot line is formed, which pivot line facilitates resilient action in the wall section (3).

11. Flat or semi-flat element (1) according to claim 3 characterized in that the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a pivot line is formed, which pivot line facilitates resilient action in the wall section (3).--

Claim 6, lines 1-2, change "any of the claims 1 - 5 characterised" to read --claim 1 characterized--.

Please add new claims 12-15 as follows:

--12. Flat or semi-flat element (1) according to claim 2 characterized in that the element (1) forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container or the like.

13. Flat or semi-flat element (1) according to claim 3 characterized in that the element (1) forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container or the like.

14. Flat or semi-flat element (1) according to claim 4 characterized in that the element (1) forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container or the like.

15. Flat or semi-flat element (1) according to claim 5 characterized in that the element (1) forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container or the like.--

REMARKS

The purpose of the foregoing Preliminary Amendment is to delete multiple dependent claims thereby minimizing the filing fee and placing the application in better form for examination under U.S. practice.

Respectfully submitted,



TPP/mat  
Attorney Docket No.: TPP 30873

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Date: May 12, 2000

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--ABSTRACT

Flat or semi-flat element (1) including a partly or completely circumambient frame (2), which element (1) is manufactured through molding of a polymeric material. The element (1) includes a carrying structure, constituted by the frame (2), and an intermediate wall section (3). The wall section (3) is connected to the frame (2) via a resilient section (4), the resilient section (4) being a part of the wall section (3). The differences in the temperature related shrinkage between the frame (2) and the wall section (3) is absorbed by the resilient section (4), whereby warping of the element (1) is avoided.--

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Flat or semi-flat element including a frame

The present invention relates to a flat or a semi-flat element including a partly or completely circumambient frame and an intermediate wall section.

Products made of plastic material are seen almost everywhere today. One way of manufacturing these products is through injection moulding of a thermoplastic material. It is a well known fact that the material thickness in such injection moulded products may not differ too much within the product since problems with warping will otherwise occur. This warping is caused by the temperature related shrinking, which is relatively great in most thermoplastic materials. An injection moulded product will normally be removed from the mould before it is completely cooled since the cycle time is an important economical factor in plastic manufacturing. The remainder of the cooling will hereby take place outside the mould. The shrinkage is related to the temperature which means that a part removed from the mould when hot will shrink more than a part removed when cold since some of the natural shrinkage can be counteracted by "freezing" the shape of the part in the mould. This means that thicker parts, which naturally contains more heat than thinner parts in the same product, will continue to shrink when cooling outside the mould. This will inevitably cause warping in the product. This problem has so far been prevented by designing the products with uniform material thickness.

There are however some cases where it would have been an advantage to be able to design products with different material thicknesses. One such example is containers where the walls and the bottom does not have to be particularly strong and the carrying structure of the container has to be strong since a lot of containers are to be stacked on top of each other, adding load to the container in the bottom of the stack. The thickness of the side walls and the bottom will in this case have to be over-dimensioned to be adapted to the injection moulding process since the carrying structure has to be sturdy. This will lead to a container heavier than necessary and that more material than necessary is used. This will of course lead to an uneconomical product.

According to the present invention it is possible to manufacture a product where the above mentioned disadvantages are avoided. The invention relates to a flat or semi-flat element including a partly or completely circumambient frame. The element is manufactured through moulding of a polymeric material, preferably injection moulding of a thermoplastic material. The invention is characterised in that the element includes a carrying structure, constituted by the frame, and an

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intermediate wall section. The wall section is connected to the frame via a resilient section which is a part of the wall section. The differences in the temperature related shrinkage between the frame and the wall section is hereby absorbed by the resilient section whereby warping of the element is avoided. The frame is preferably constituted by a U-shaped profile, a number of tightly placed ribs, a closed hollow profile or the like. The wall section is suitably connected to the frame at or at least near to the gravity centre line of the frame.

According to one embodiment of the invention the frame is a closed hollow profile formed through injection of a pressurised fluid into a still molten thermoplastic material. The material thickness of the wall section is thinner closest to the connection between the frame and the wall section than the average thickness of the wall section and the frame, whereby a barrier is formed in this connection part at the solidification of the thermoplastic material. The barrier prevents the pressurised fluid from entering the wall section during the manufacturing process.

The hollow profiles can suitably be achieved by substantially filling the mould with molten thermoplastic material from an injection nozzle. The molten thermoplastic material is then allowed to solidify somewhat on the surface closest to the inner walls of the mould cavity. A pressurised fluid, preferably a gas, is thereafter injected through an intake suitably placed at one end of the profile. The gas is allowed to flow into the still molten plastic in the core of the profile wherein a cavity is formed in the profile. The surplus of still molten plastic is hereby ejected from of the mould cavity. An element of this type can suitably be made from a thermoplastic material selected from the group, polyethylene, polypropylene, polyamide, polystyrene, acryl-butadiene-styrene, polyalkylene-terephthalate or the like.

The material thickness of the wall section is suitably thinner closest to the connection between the frame and the wall section than the average thickness of the wall section and the frame, whereby a pivot line is formed. The pivot line will facilitate resilient action in the wall section.

The element suitably forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container or the like

The invention is explained further together with enclosed drawings, showing different embodiments of the invention wherein,

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-figure 1 shows, in perspective a first embodiment of an element 1 with a frame 2 and an intermediate wall section 3 .

-figure 2a - 2d show, in cross-section, parts of different embodiments of an element 1 with profiles constituting the frame 2 of the element 1.

Figure 1 shows, in perspective one embodiment of an element 1 with a frame 2 and an intermediate wall section 3. The element 1 includes a carrying structure constituted by the frame 2, and an intermediate wall section 3. The wall section 3 is connected to the frame 2 via a resilient section 4. The resilient section 4 is a part of the wall section 3. Differences in the temperature related shrinkage between the frame 2 and the wall section 3 is absorbed by the resilient section 4 whereby warping of the element 1 is avoided.

Figure 2a - 2d show, in cross-section, parts of different embodiments of an element 1 with profiles constituting a frame 2 of the element 1. The element 1 includes a carrying structure, constituted by the frame 2, and an intermediate wall section 3. The wall section 3 is connected to the frame 2 via a resilient section 4. The resilient section 4 is a part of the wall section 3. The frame 2 is constituted by a U-shaped profile (fig. 2b), a number of tightly placed ribs (fig. 2d), a closed hollow profile (fig. 2a) or an L-shaped profile (fig. 2c) The wall section 3 is connected to the frame 2 at or very close to the gravity centre line 5 of the frame 2. The frame 2 is constituted by a closed hollow profile (fig. 2a) formed through injection of a pressurised fluid into a still molten thermoplastic material. The material thickness of the wall section 3 is thinner closest to the connection between the frame 2 and the wall section 3 than the average thickness of the wall section 3 and the frame 2, whereby a barrier is formed, in this connection part at the solidification of the thermoplastic material, which barrier, prevents the pressurised fluid from entering the wall section 3 during the manufacturing process. This thinner part will also act as a pivot line (Fig. 2a - 2b). The pivot line will facilitate resilient action in the wall section 3.

The intermediate wall section 3 can also be provided with a number of holes. These holes can be of different shape and size, depending on the requirements. Such holes are normally used in transport containers when ventilation is required.

The invention is not limited to the embodiments shown, since it can be varied in different ways within the scope of the invention.

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## CLAIMS

1. Flat or semi-flat element (1) including a partly or completely circumambient frame (2), which element (1) is manufactured through moulding of a polymeric material, preferably injection moulding of a thermoplastic material, characterised in that the element (1) includes a carrying structure, constituted by the frame (2), and an intermediate wall section (3), which wall section (3) is connected to the frame (2) via a resilient section (4), the resilient section (4) being a part of the wall section (3), wherein differences in the temperature related shrinkage between the frame (2) and the wall section (3) is absorbed by the resilient section (4) whereby warping of the element (1) is avoided.
2. Flat or semi-flat element (1) according to claim 1 characterised in that the frame (2) is formed by a U-shaped profile, a number of tightly placed ribs, a closed hollow profile or the like.
3. Flat or semi-flat element (1) according to claim 1 or 2 characterised in that the wall section (3) is connected to the frame (2) at or very close to the gravity centre line (5) of the frame (2).
4. Flat or semi-flat element (1) according to any of the claims 1 - 3 characterised in that the frame (2) is a closed hollow profile formed through injection of a pressurised fluid into a still molten thermoplastic material, that the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a barrier is formed in this connection part at the solidification of the thermoplastic material, which barrier prevents the pressurised fluid from entering the wall section (3) during the manufacturing process.
5. Flat or semi-flat element (1) according to any of the claims 1 - 3 characterised in that the material thickness of the wall section (3) is thinner closest to the connection between the frame (2) and the wall section (3) than the average thickness of the wall section (3) and the frame (2), whereby a pivot line is formed, which pivot line facilitates resilient action in the wall section (3).
6. Flat or semi-flat element (1) according to any of the claims 1 - 5 characterised in that the element (1) forms a side wall of a container or a collapsible container, a bottom section of a container or a collapsible container or a lid of a container or the like.

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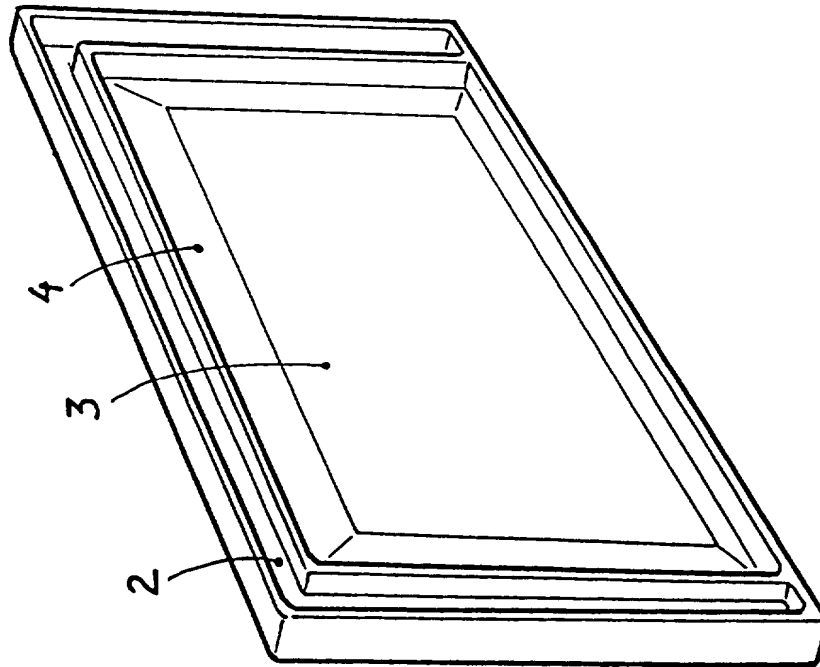


Fig. 1

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Fig. 2a

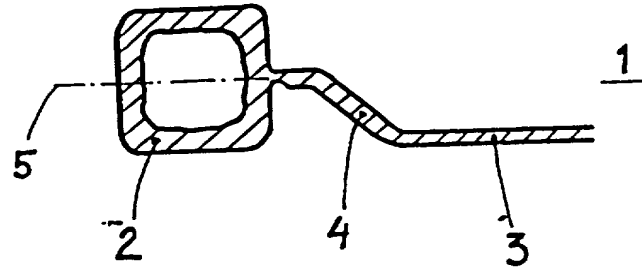


Fig. 2b

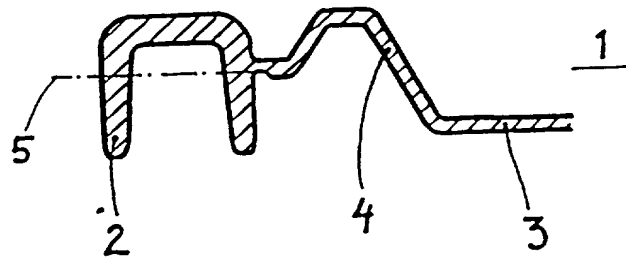


Fig. 2c

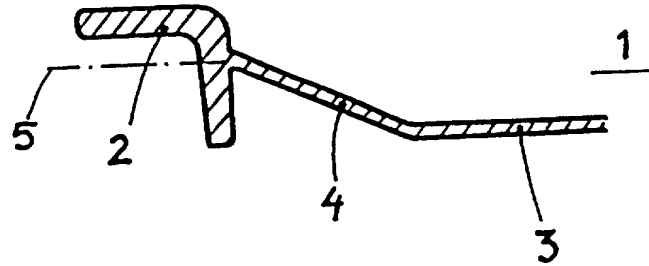
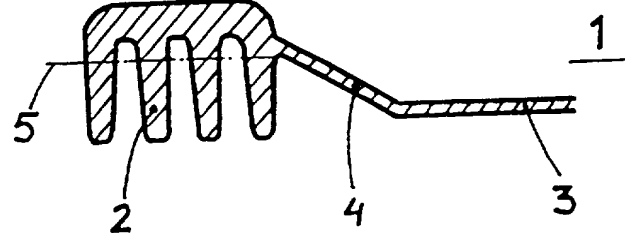


Fig. 2 d



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Case 580 US

COMBINED DECLARATION AND POWER OF ATTORNEY FOR  
UTILITY PATENT APPLICATION (Includes PCT)

Attorney Docket No.  
TPP 30873

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;  
that

I believe I am the original, first and sole inventor (if only one name is listed below)  
or an original, first and joint inventor (if plural inventors are listed below) of the  
subject matter which is claimed and for which a patent is sought on the invention entitled:

FLAT OR SEMI-FLAT ELEMENT INCLUDING A FRAME

the specification of which (check one)

☐ is attached hereto.

☐ was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_  
and was amended on \_\_\_\_\_ (if applicable)

☒ was filed as PCT International Application No. PCT/SE98/0199 on November 4, 1998 and  
was amended under PCT Article 19 on \_\_\_\_\_ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified  
specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this  
application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I do not know and do not believe the claimed invention was ever known or used in the United  
States of America before my or our invention thereof, or patented or described in any printed  
publication in any country before my or our invention thereof or more than one year prior to  
this application, that the same was not in public use or on sale in the United States of  
America more than one year prior to this application, that the invention has not been  
patented or made the subject of an inventor's certificate issued before the date of this  
application in any country foreign to the United States of America on an application filed  
by me or my legal representatives or assigns more than twelve months prior to this  
application.

I hereby claim foreign priority benefits under Title 35, United States Code §119 and/or  
§365(a)(b) of any foreign application(s) and United States provisional applications for  
patent or inventor's certificate listed below and have also identified below any foreign  
application for patent or inventor's certificate having a filing date before that of the  
application(s) on which priority is claimed:

Prior Foreign and U.S. Provisional Application(s)

Priority Claimed

<u>9704153-7</u>	<u>Sweden</u>	<u>13 November 1997</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	Day/Month/Year Filed	Yes	No
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	Day/Month/Year Filed	Yes	No

Attorney Docket No. TFP 30873

I hereby claim the benefit under Title 35, United States Code, §120 and/or §365(c) of any United States application(s) or PCT international application(s) designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application Serial No.	Filing Date	Status
		(patented, pending, abandoned)

Application Serial No.	Filing Date	Status
		(patented, pending, abandoned)

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I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Stevens, Davis, Miller & Mosher, L.L.P.; Anthony P. Venturino, Reg. No. 31,574; James E. Ledbetter, Reg. No. 28,732; and Thomas P. Pavelko, Reg. No. 31,689. Direct all telephone calls to telephone no. (202) 785-0100 and faxes to (202) 202-408-5200.

Address all correspondence to 1615 L Street, N.W., Suite 850, Washington, D.C. 20036.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole, First Inventor Manfred BRAUNER	Inventor's Signature <i>Manfred Brauner</i>	Date May 23, 2000
Residence: Wien, Austria	Citizenship Austrian	
Post Office Address: Spohrstrasse 55, A-1130 Wien, Austria		